

Consensus, Control and Corporate Boards*

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Abstract

We investigate properties of shareholder-value maximizing corporate boards in situations where both the management and the board have expertise (or private information) relevant for the decision facing the corporation. We suppose that the board cannot directly monitor management in a way that eliminates distortions arising out of managerial agency. This creates a trade-off between improving information sharing and reducing distortions in decision-making, leading shareholders to often design a board that is imperfectly aligned with both shareholders and management. Indeed, even when management has complete control over decision-making and the board only has an advisory role, the optimal board may be designed to provide “bad” advice to management in order to limit the ex-post costs of managerial agency. We establish our results by investigating the relationship between shareholder value maximization and the possibility of generating ex-post consensus between management and the board. We also show that the optimal board will be able to generate shareholder consensus and investigate how this is affected by the transparency of board-management deliberations. These results add to our understanding of corporate governance as an instrument that facilitates efficient (though strategic) information transmission within the firm.

JEL classification: C7, D2, D7, D8, G3, L2.

Key Words: delegation, intermediation, cheap talk, consensus, governance, hierarchies.

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1 Introduction

Consider a corporation in a setting where effective communication between management and the board is important for making efficient decisions. In practice, such communication is often constrained by the fact that management has its own agency that predisposes it towards one of the decisions under consideration. For instance, management may favor going ahead with an investment motivated in part by the joy of empire-building, or be biased towards rejecting a raider's offer due to private benefits of retaining control. If such conflicts are strong, decision making will be based on coarse information transmission between the management and the board of directors, acting presumably in shareholder interest. From the normative perspective of maximizing shareholder value, what should an optimal board look like in such situations?

To answer this question we consider an environment where management has *expertise* (payoff-relevant private information) relevant for the decision facing the corporation. Furthermore, the board cannot effectively monitor management. It can, at best, approve or turn down management proposals, in light of its own expertise and experience as well as any information that management provides in its efforts to persuade the board. In making its decisions, the board must then take into account managerial discretion not only in the representation of information but also in the implementation of approved proposals.

In such situations shareholders face a fundamental trade-off. If they choose a board that shares the management's interests then information transmission between the manager and a sympathetic board should be quite effective and the final decision of the board will be well informed. However, decision-making will be distorted away ex-post from shareholder value maximization. On the other hand, if shareholders choose a board that is less sympathetic to management, ex-post decision-making will be closer to shareholder interests, although this will be at the cost of poor information transmission between management and a skeptical board resulting in poorly informed decision-making. We show that the optimal board will often be imperfectly aligned with both shareholders and management, balancing the gain from improved information flows against the cost of distorted decision-making. In effect, shareholders will gain by replacing the agency problem between shareholders and management by two smaller agency problems, one between management and the board and a second one between the board and shareholders.

This trade-off and attendant benefit of an intermediate board depends on the fact that the final

decision requires the board's approval. In such cases, we say that the board has a *supervisory* role. Our results on optimal expert supervisory boards that are conflicted with both shareholders and management are similar to results on delegation due to Dessein (2002) as well as related results due to Harris and Raviv (2005, 2008). However, our analysis goes beyond these papers in a number of respects.

First, we show that the benefits of an imperfectly aligned board extend even to the case where the management has total control over the firm and can implement its desired action with or without approval from the board. In such cases, the board only has an advisory role and the management may choose to solicit and/or ignore the board's expert advice. If shareholders choose an advisory board that is conflicted relative to management, they can only hamper information flows between the board and management without affecting in any way the distortion in the final decision-making that is fully controlled by management. Nevertheless, shareholders may gain by choosing an *advisory* board that is imperfectly aligned with management. The conflict of interest between board and management allows shareholders to commit to credibly providing vague but valuable advice to management. When the manager is uncertain about his own agenda, vague advice from the board preserves managerial doubt about the benefits of insisting on his agenda. This may benefit shareholders in ex-ante expected terms by limiting the distortion arising out of managerial control over actual decision making, even after adjusting for the expected costs of relatively poor information transmission.

We compare next the relative merits of supervisory and advisory boards from the perspective of shareholders. This is the same as determining the value of allocating decision-making authority (but not control over board composition) to the board or the management. When the conflict of interest between management and board is small, management is likely to agree with the final decision made by a supervisory board and the value of allocating authority is likely to be small. We pursue this intuition via developing a notion of agreement between the board and management that we call consensus. Consensus obtains when both sides agree with the final decision given their private information and the information revealed endogenously in equilibrium. We show that communication facilitates consensus. Indeed, whenever any equilibrium (informative or uninformative) of the communication game between board and management generates consensus, so does the most informative equilibrium. Furthermore, if sufficiently more information is exogenously revealed, beyond what is permissible in equilibrium, then consensus necessarily cannot obtain. In this sense,

the most informative equilibrium maximizes the chances of consensus.

We use our notion of consensus to show that the value of authority is equal to the price of consensus. More precisely, the optimal advisory board from the perspective of shareholders is the optimal supervisory board, but determined subject to the additional constraint that the board must obtain managerial consensus. The loss in shareholder value from imposing this additional constraint of consensus is equal to the loss in value from letting management wrest control of final decision-making from the board. It follows from this that shareholders can never find it strictly optimal to give control over decision-making (let alone the board) to management.

A third important difference between our results and the delegation results in Dessein (2002) has to do with commitment and the related notion of shareholder consensus. We say that shareholder consensus obtains when shareholders necessarily agree with the final decisions made by the board (or management). We show that the ability to generate shareholder consensus is a necessary property of the optimal board at the optimal allocation of authority. It follows that shareholders do not need to commit to cede control to the expert board. The optimal board need only be an intermediary with final decision-making authority concentrated in a perfectly shareholder aligned board member. This is true as long as shareholders do not observe the details of deliberations between board and management and often even when they do.

These results shed light both on features of one-tier boards that are commonly observed in the U.S., Canada and the U.K. as well as those of two-tier boards that are more common in continental Europe (see, e.g., Cadbury, 1995). One tier boards usually have both executive as well as independent members and integrate the advisory function of a corporate board with its supervisory role. In contrast, two-tier boards tend to separate these two functions. The lower tier provides advice on decision management and typically has executive members. The upper tier is concerned exclusively with a supervisory role and typically contains only independent directors (as well as founding family members with controlling interests) who are presumably more aligned with shareholders. Both these structures are consistent with our normative theory of shareholder value maximizing boards. Since the optimal board generates shareholder consensus, it can be structured as a two-tier board with a shareholder aligned upper tier and a (partially management aligned) expert lower tier. Alternatively, we may replace the upper tier by the executive committee of a one-tier board and the lower tier by an expert audit committee.

Beyond the context of designing corporate boards the present paper adds to our understanding

of broader issues concerning the allocation of authority and communication rights within organizations. It belongs to the literature that takes an agency-based approach to understanding organizations based on a conflict in preferences between owners and managers (Alchian and Demsetz (1972), Jensen and Meckling (1976)). In part however, it also reconciles the conflict-based approach with the team-theoretic approach pioneered by Williamson (1985) that focuses more on costs of information transmission within hierarchies. Our results provide some general insight on the widespread practice of delegating collective decisions to specialized committees of possibly biased agents, both in cases where the committee has executive power and in cases where it performs merely an advisory role.

Finally, we show that our binary decision problem with two-sided private information has a close formal relationship, in terms of equilibria and payoffs, to the canonical model of Crawford and Sobel (1982) with a continuum of possible decisions but one-sided private information. Because of this, many results originally established in the Crawford-Sobel set-up, such as those of Dessein (2002), happily extend to our setting and we make heavy use of this ‘equivalence’ throughout the paper.

The rest of this draft is organized as follows. In Section 2 we set up our basic model. In Section 3 we establish our main results on communication, consensus and control. We investigate the implications of these results in more detail in Section 4 where we also discuss some extensions including those related to transparency, commitment and incentives. Section 5 contains a discussion of the related literature (not included in the present draft) while Section 6 concludes (not included in the present draft). The Appendix contains all proofs (not included in the present draft).

2 The Model

A principal or owner (the shareholders collectively) must undertake one of two actions: the status quo or the alternative. The status quo is safe and we normalize its value to shareholders equal to zero. The alternative has uncertain value $x - y$ where $x \in [0, 1]$ is the private information or expertise of management (the agent) and $y \in [y_L, y_H]$ is the private information or expertise of the board (delegate). Let F_x and F_y denote the common knowledge priors associated with the random variables x and y with densities f_x and f_y . We assume that x and y are statistically independent.

We will often refer to the alternative as a decision to ‘invest’ in a project with the status

quo being the default option of not investing. In such a case managerial expertise could reflect specialized knowledge of the operational details of the project whereas the board’s information could reflect expertise on legal or regulatory issues. Alternatively, one may think of a situation where the firm is a potential takeover target and has to decide whether or not to accept a raider’s offer or adopt an anti-takeover measure. In such cases, management may have private information about the intrinsic value of the firm under current management whereas the board may have expertise in evaluating the legality of anti-takeover measures proposed by management or in estimating the value of keeping alive the interest of potential raiders in the market for corporate control.¹

The central conflict of interest in this paper is between management and shareholders. Management is biased in favor of the alternative and the value of the alternative to management is the sum of shareholder value $x - y$ and a private benefit b_m whereas the value of the status quo is zero. The managerial bias parameter $b_m > 0$ reflects managerial agency in the form of private benefits of empire-building and expanded control.²

The central question of this paper concerns the composition of the optimal board from the perspective of shareholders. We model the board as having an (endogenous) bias $b_d \in [0, b_m]$ that captures its “ideological” sympathy for management. Accordingly, the value of the alternative to the board is $x - y + b_d$ while the value of the status quo is zero. In general, the board may consist of both shareholder aligned members (such as independent directors) or management aligned members (friends or associates of management). If the board takes its final decision via majority voting then we may think of b_d as the bias of the median board member.³ Our central question then boils down

¹Nothing depends on the status quo being safe and we may think of $x - y$ as the net (possibly negative) benefit of the alternative relative to the status quo. We also permit the relative importance of the two sources of information to vary, e.g., by writing $y = kz$, where z is a random variable capturing the board’s information and $k \geq 0$ a scalar parameter that measures the relative importance of the two sources of information for the decision at hand.

²The importance of managerial agency in corporate governance and performance has been extensively analyzed (See, e.g., Jensen and Meckling, 1976). In this paper, we take this agency as given and suppose that the bias b_m is a necessary cost of having a manager with payoff-relevant expertise x . For most of the paper, we also suppose that all private information is unverifiable and contracts are incomplete so that management is not perfectly aligned with shareholders even after an optimal provision of incentives. We also abstract away from reputational concerns. Apart from difficulties in enforcing reputational schemes when information is noisy and unverifiable, it may not also be optimal to fire a manager with valuable firm-specific capital (e.g., expertise x about the firm) that her replacement will take time to build. See Section 3 for a detailed discussion of many of these issues.

³Alternatively, we may assume that the board maximizes a weighted sum of the welfare of its shareholder aligned

to asking what choice of b_d will maximize the ex-ante expected welfare of shareholders.⁴

In determining the optimal choice of b_d from the perspective of shareholders, we contrast two different scenarios. In the first scenario, the board has some control over management and any decision made by the firm must obtain the board's approval. We call this the case of a *supervisory board*. Notice that even a supervisory board can only approve or reject a proposal brought forward to it by management and that will be implemented ultimately by management. This implicitly captures a situation where most of the effective authority within the firm is in the hands of management and the board has a limited ability to monitor management ex-post and limit its agency.

Our second scenario takes this situation of effective managerial authority to the extreme by assuming that management has total control over the firm and can take any decision it wishes to even in defiance of the board's wishes. In such cases, the board does not have any effective supervisory authority over management and may only play an advisory role. Accordingly, we call this the case of an *advisory board*. We wish to find the shareholder-value maximizing choice of b_d , both in the case of a supervisory as well as an advisory board. We wish also to identify precisely the value of authority, i.e., the relative merits of optimal supervisory and advisory boards.

In what follows we will model both cases of a supervisory and an advisory board as a cheap talk game between management and the board. The assumption of cheap talk amounts to assuming that all private information is soft and cannot be verified by courts so that contracts written on these variables are not enforceable. Since a supervisory board makes the final decision, we model this case as a simple game where management first sends a cheap talk message to the board following which the board takes a final decision. In contrast, we model the case of an advisory board as a game where the board first sends a cheap talk message to management following which management takes the final decision. We also consider alternative game forms that include the possibility of extensive communication between the board and management in situations where both parties have private information. In order to help the reader develop intuition for what follows from Section 3 onwards,

members (with zero bias) and management aligned members (with bias b_m), with the weights being proportional to the size of each group. In this scenario, the ratio b_d/b_m measures the proportion of management aligned board members.

⁴In reality, both management and shareholders have a say in board composition. The present draft presents an entirely normative theory that seeks to identify necessary properties of shareholder value maximizing corporate boards.

we begin however by considering the simple benchmark case of a novice board, i.e., the case where the board has no payoff-relevant private information.

2.1 Novice boards: a benchmark

Let $y_L = y_H = \bar{y} \equiv E[y]$ in order to capture a situation where the board has no private information. To make matters interesting suppose also that $b_m < \bar{y} < 1 + b_m$. This ensures that the management has an incentive to recommend either the status quo or the alternative to a supervisory board as a function of its private information $x \in [0, 1]$. It is a necessary condition for influential communication. The following lemma is immediate.

Lemma 1 *Assume a supervisory novice board. If communication is influential, the board implements the manager's optimal decision rule.*

In any influential equilibrium, the management recommends the alternative if $x - \bar{y} + b_m > 0$ and the status quo otherwise. The board follows the manager's advice (i.e., an influential equilibrium exists) whenever

$$E[x|x - \bar{y} + b_m > 0] - \bar{y} + b_d > 0 \quad (1)$$

Our first result follows immediately from the lemma.

Proposition 1 *With novice supervisory boards, a perfectly shareholder aligned supervisory board is always weakly optimal and sometimes strictly optimal.*

With a novice advisory board, management will simply take its own optimal decision. The same outcome obtains under a supervisory board as long as communication is influential. When communication is influential under a perfectly shareholder-aligned supervisory board, this is optimal for shareholders. On the other hand, if communication is not influential in this case, then a shareholder aligned supervisory board is strictly optimal, although decision-making is uninformative. In the following sections we show that a version of Proposition 1 extends even to the case of expert boards. It is a considerably more nuanced version however, in particular since communication possibilities are richer when the board also has information that is payoff-relevant for management.

3 Expert boards

We turn now to the case where the board has independent expertise y that is payoff-relevant for all parties.⁵ We begin by characterizing the set of cheap talk equilibria, both in the case of supervisory boards as well as the case of advisory boards.

3.1 Communication

The next result completely characterizes the set of cheap talk equilibria with a supervisory board, i.e., when management speaks first and then the board makes a decision.

Proposition 2 *Fix $b_d < b_m$ and assume an expert supervisory board. There exists $N^*(b_m, b_d) \geq 1$ such that for each N with $1 \leq N \leq N^*(b_m, b_d)$, there exists an equilibrium where the manager uses a monotone partitional strategy, i.e., discloses the interval $[c_{i-1}, c_i]$ in which x lies, with $0 = c_0 < \dots < c_i < \dots < c_N = 1$, following which the board chooses the alternative iff $y < t_i$ where*

$$c_i + b_m = E[y | t_i < y < t_{i+1}], \quad i = 1, \dots, N-1 \quad (2)$$

$$t_i = \min\{y_H, \max\{y_L, E[x | c_{i-1} < x < c_i] + b_d\}\}, \quad i = 1, \dots, N. \quad (3)$$

Furthermore, every equilibrium is essentially identical to some equilibrium in this class.

Proposition 2 shows that the equilibrium set of our cheap talk game with binary decisions and two-sided private information is similar to that of the cheap talk game with 1-sided private information and continuous actions considered by the celebrated paper of Crawford and Sobel (1982, henceforth CS). To gain more insight on this correspondence, consider the manager's expected payoff given any message μ . The board will choose the alternative if $y < t \equiv E[x | \mu] + b_d$ which occurs with probability $q \equiv F_y(t)$. We may think of the probability q as the 'action' that the board (receiver) takes, from the perspective of the manager (sender). Type x of the manager's expected payoff can then be written entirely as a function of the action q , via a change of variables, as follows:

$$q[x - E[y | y < t] + b_m] \equiv q(x + b_m) - \int_0^q F_y^{-1}(z) dz \quad (4)$$

⁵We suppose that this information is observed by all board members and only by them and maintain this assumption through Section 4.1. The effect of privately informed board members and side-communication will be explicitly considered in Section 4.2.

It is apparent that the last expression is single-peaked and single-crossing as a function of q for fixed x , explaining the parallel with CS. In contrast to CS however, in our case the sender has a weak (as opposed to strict) upward bias relative to the receiver. This is because whenever $x + b_m < y_L$ or $x + b_d > y_H$, both the board and management will agree on the desired action q . Although this difference from CS complicates some of the analysis, it will be helpful for the reader to keep the correspondence with CS in mind for much of what follows. For instance, under the assumed conditions, we are not guaranteed that there is a unique equilibrium for each $N \leq N^*$. Because of this, we assume for the rest of the paper that the analogue of condition M in CS holds. This implies not only that for each $N \leq N^*$ there is a unique equilibrium, but also that all parties get higher ex-ante expected payoffs from equilibria with higher N . Furthermore, as will also be shown in the Appendix, only the equilibrium with the highest number of elements N^* satisfies the refinement proposed in Chen, Kartik and Sobel (2008). Accordingly, we will restrict attention to this most informative equilibrium with $N^*(b_m, b_d)$ partition elements for fixed b_m and b_d .

Proposition 2 characterizes all equilibria for the game where manager speaks first and then the board makes a decision. We use the short-hand mb^* to denote this sequence of moves, where the asterisk denotes that the board also has decision-making authority. Since we have two-sided private information, a natural question is to ask if the equilibrium set is altered if we permit more extensive (but sequential) communication.

Proposition 3 *Fix b_d, b_m and assume an expert supervisory board. The set of (pure strategy) equilibrium decision rules are identical across the games mb^* , bmb^* , b^*mb^* and b^*m^* .*

The game mb^* has already been described before. In game bmb^* the board speaks first, followed by management, followed by the board taking a decision. In contrast, in the game b^*mb^* the board can also take a (unilateral) decision in the first round or choose to speak to management. If it does the latter, then management speaks to the board following which the board takes a decision. Finally, in game b^*m^* , the board first takes a decision or speaks to management. In the latter case, it also “hands over” decision making authority to management and management makes the final decision. We leave the intuition for future drafts (but refer the reader to Section 3.2 for partial intuition).

We turn now to the equilibrium set under an advisory board, i.e., when management controls decision making. The next two results are analogues of Propositions 2 and 3 for the case of an

advisory board (with obvious analogous notation)

Proposition 4 *Fix $b_d < b_m$ and assume an expert advisory board. There exists $M^*(b_m, b_d) \geq 1$ such that for each M with $1 \leq M \leq M^*(b_m, b_d)$, there exists an equilibrium where the board uses a monotone partitional strategy, i.e., discloses the interval $[t'_{i-1}, t'_i)$ in which y lies, with $y_L = t'_0 < \dots < t'_i < \dots < t'_M = 1$, following which the management chooses the alternative iff $x > c'_i$ where*

$$t'_i = E[x | c'_i < y < c'_{i+1}] + b_d, \quad i = 1, \dots, M-1 \quad (5)$$

$$c'_i = \min\{1, \max\{0, E[y | t'_{i-1} < y < t'_i] - b_m\}\}, \quad i = 1, \dots, M \quad (6)$$

Furthermore, every equilibrium is essentially identical to some equilibrium in this class.

Proposition 5 *Fix b_d, b_m and assume an expert advisory board. The set of (pure strategy) equilibrium decision rules are identical across the games bm^* , mbm^* , m^*bm^* and m^*b^* .*

We now turn to the question of optimal design of the board's bias b_d and the optimal allocation of control over decision making (authority) by shareholders.

3.2 Consensus and Control

When is the allocation of control over decision-making irrelevant for shareholder value? We show below that the allocation of control is irrelevant whenever consensus obtains, i.e., when management necessarily agrees with the board's final decision given its private information x and the information revealed endogenously in equilibrium via the board's decision. When consensus obtains the same decision rule would be implemented if instead the board had only an advisory role and management had total control over decision-making.

Proposition 6 *Fix b_d, b_m . When consensus obtains the allocation of decision-making authority is irrelevant for shareholder value.*

1. *With an expert supervisory board, consensus obtains iff $E[y | y > t_N] \geq 1 + b_m$ or $t_N = y_H$.*
2. *With an expert advisory board, consensus obtains iff $E[x | x > c'_M] + b_d \geq y_H$ or $c'_M = 1$.*

Corollary 1 *Communication facilitates consensus.*

The corollary says that the most informative equilibrium is the equilibrium most likely to obtain consensus. It is interesting because as long as $b_d \neq b_m$, (exogenous) full revelation of the state (x, y) is bound to result in a lack of consensus with strictly positive probability because of the conflict of interest between the two parties. On the other hand since the supervisory board's highest threshold t_N is increasing in N (by condition M), if consensus obtains in a less informative equilibrium it will also obtain in a more informative equilibrium (but not conversely). In this sense, the most informative cheap talk equilibrium maximizes the chance of consensus. If less information is disclosed in equilibrium, consensus may be jeopardized. However, if sufficiently more information that is inconsistent with equilibrium behavior is exogenously disclosed, then consensus necessarily cannot obtain.

The notion of consensus is a key determinant of the optimal allocation of control. To see this, let $V_{b\text{-control}}(b_d; b_m)$ be the ex-ante expected shareholder value when the supervisory board controls decision-making. Let b_d^* be the optimal supervisory board, i.e., b_d^* solves

$$\max_{b_d \in [0, b_m]} V_{b\text{-control}}(b_d; b_m) \quad (7)$$

Similarly, let $V_{m\text{-control}}(b_d; b_m)$ be the ex-ante expected shareholder value when management controls decision-making and the board merely has an advisory role. Let b_d^{**} be the optimal optimal advisory board, i.e., b_d^{**} solves

$$\max_{b_d \in [0, b_m]} V_{m\text{-control}}(b_d; b_m) \quad (8)$$

The following result is still a partial conjecture at the time of writing.⁶

Proposition 7 *The value of authority is equal to the price of consensus, i.e., b_d^{**} solves*

$$\max_{b_d \in [0, b_m]} V_{b\text{-control}}(b_d; b_m)$$

but subject to the additional constraint of consensus.

Corollary 2 *Allocating authority to management is never strictly optimal for shareholders.*

The corollary follows from Proposition 7 because the additional constraint of consensus can only lower the (optimized) shareholder value relative to the case with a supervisory board where such

⁶The current proof covers the case where both x and y are uniformly distributed, and either $y_H < 1 + b_m$ or $y_L > b_m$.

a constraint is not imposed. Proposition 7 is interesting for reasons that go beyond determining the optimal allocation of authority. For instance, we may think of the case with an advisory board as a case where the final decision is determined by voting among the general body of shareholders and where management owns or controls the majority of voting shares. In such a case, Proposition 7 says that the expected welfare of minority shareholders is exactly equal to their expected payoff when they are in the majority but face the constraint of ensuring that the board has to obtain minority consensus with its decisions.

As we show in the next section, shareholders will often choose an optimal advisory board that is imperfectly aligned with management. Whenever this happens, shareholders benefit from withholding the board's information from management when management has total control over decision making. In contrast, when the board controls decision-making shareholders benefit from committing ex-ante to reveal the board's information, as discussed in Section 4.

We conclude this section by turning to the question of shareholder consensus. We ask whether shareholders will agree with the final decision reached by the optimal board after deliberations with management. The next result is immediate.

Proposition 8 *With the optimal board and at the optimal allocation of authority, shareholders will agree with the final decision, provided they do not observe the deliberations between the board and management.*

The last result follows from the following two observations. First, shareholders will necessarily agree with a board decision to choose the status quo because both the management and the board are biased against the status quo relative to shareholders, and a recommendation from the board against the direction of its own bias will meet with shareholder approval. Furthermore, shareholders will also agree with the *optimal* board's decision to choose the alternative, since the optimal board is weakly better in expected terms than a perfectly shareholder aligned board and since shareholders will always agree ex-post with the decision of a perfectly shareholder aligned board.

Proposition 8 shows that the optimal board may be designed as a two-tier structure with a perfectly shareholder aligned upper tier that has final decision-making authority. As long as the lower tier is also chosen optimally, and as long as the upper tier does not observe the details of the deliberations between the lower tier and management, shareholder aligned decision-making authority within the board is optimal for shareholders. In this sense, the basic message of Proposition 1

extends to the environment with expert boards that we have analyzed in this section.

3.3 The double uniform case

To derive expressions for the optimal choice of b_d , we assume in this section that x and y are both uniformly distributed. For the next result we assume further that $y_H > 1 + b_m$ and $y_L < b_m$. Inspection of equations (2) through (4) then yields that the equilibrium equations under a supervisory board are identical to those in the canonical uniform-quadratic example of CS. We then have the following result.⁷

Proposition 9 *Suppose F_x, F_y are uniform with $y_H > 1 + b_m$ and $y_L < b_m$. With an expert supervisory board, the optimal b_d^* is given by:*

$$b_d^* = \begin{cases} b_m & \text{if } b_m \leq \frac{1}{6} \\ \frac{1}{4} - \frac{1}{2}b_m & \text{if } \frac{1}{6} < b_m \leq \frac{1}{4} \\ \frac{1}{2}b_m & \text{if } \frac{1}{4} < b_m < \frac{1}{2\sqrt{2}} \\ 0 & \text{otherwise} \end{cases}$$

In a technical sense, this result is identical to that of Proposition 5 in Dessein (2002). This is because under the assumed conditions, the equilibrium equations and expressions for ex-ante payoffs are identical to the uniform-quadratic version of the Crawford-Sobel model considered by Proposition 5 in Dessein (2002). However, the current result extends this delegation result to settings with two-sided private information and, via Proposition 3 in the present paper, for a number of different, possibly extended communication protocols.

Furthermore, from Propositions 7 and 8 it is clear that shareholders do not need to commit to abide by the decisions of the supervisory board. As long as they do not observe the details of the deliberations between board and management they will agree with the final recommendation of the board. In this sense, even the optimal supervisory board may be thought of as an advisory board or an intermediary, with final decision-making authority resting in a completely shareholder aligned (but uninformed) upper-tier.

⁷Similar results will obtain when $y_H < 1 + b_m$ or $y_L > b_m$ although in such cases we may have corner solutions and the CS equations will not immediately apply. We postpone an explicit derivation of expressions for b_d^* and b_d^{**} in such cases for future drafts.

Finally, one can compute explicitly the optimal board bias b_d^{**} for the case where manager has total control over decision-making and the board is merely an advisor. For instance, when y_H is sufficiently large management will always agree with any supervisory board’s final decision and so, from Proposition 7, it follows that the optimal advisory board coincides with the optimal supervisory board, $b_d^{**} = b_d^*$, and this optimal board may be imperfectly aligned with management as well as shareholders. However, even when y_H is not so large and consensus is not automatically guaranteed, the bias of the optimal advisory board b_d^{**} needs to be sufficiently greater than the bias of the optimal supervisory board, b_d^* , in order to generate consensus. In such cases as well, the optimal advisory board may be imperfectly aligned with management. Whenever this happens, shareholders gain by withholding information from management via creating an agency problem between the board and management.

4 Extensions

The previous results on optimal advisory and supervisory boards, together with those on shareholder consensus, provide an argument in favor of ‘deep’ hierarchies in organizations that are mainly concerned with the efficacy of information transmission between stakeholders with conflicts of interest. In this section we shed further light on these results by briefly discussing some variations on the basic model. We begin by considering the possibility of obtaining shareholder consensus when shareholders observe board–management deliberations, e.g., when an activist shareholder is a board member. Subsequently, we consider the value to shareholders from committing to reveal the board’s information perfectly and discuss as well optimal mechanisms (without transfers). Finally, we discuss some alternative notions of agency as well as the possibility of optimal contracting. For the present draft we refrain from presenting formal results and keep the discussion informal.

4.1 Transparency and shareholder consensus

Proposition 8 shows that shareholders will agree with the final decision of the optimal (supervisory) board, at least as long as they do not observe the details of the deliberations between board and management. A natural question is whether shareholder consensus obtains when shareholders observe the communication between (but not the signals of) board and management. It turns out that the answer to this question depends on details of the communication protocol between

board and management, even though changes in these protocols have no effect on decision-making (see Proposition 3). In particular, we can show that when b_m is not too small, then under the optimal supervisory board b_d^* , shareholders will agree with the final decision of the board provided communication takes place according to the game bmb^* but not if it takes place according to the game mb^* , even though the two games implement the same set of equilibrium decision rules. The intuition is that in game bmb^* , the less biased party relative to shareholders (the board) reveals more information publicly compared to the more biased party (management). This allows for shareholder consensus even though shareholder consensus will not obtain in the outcome-equivalent equilibrium of the game mb^* where management discloses more information and the board only takes a final decision. We leave a fuller characterization of the effect of communication protocols on third party consensus, as well as the effect of the joint requirements of shareholder consensus and transparency on shareholder value, for future drafts.

4.2 Disclosure, side-communication and optimal mechanisms

In previous sections we have interpreted the bias of the optimal board as the average (or median) bias of a board that consists possibly of management aligned as well as shareholder aligned members. This raises the question of what would happen, if for instance, a management aligned board member privately “leaks” the board’s information to management. Equivalently, one may ask whether shareholders would like to make management a permanent member of the board, with the understanding that a member of the board automatically learns the realization of y .

From Proposition 7 and the discussion that follows, when management has all authority and the board plays only an advisory role, shareholders often strictly prefer withholding information from management. In such cases, a leak of the board’s information to management will hurt shareholders. However, in the case of a supervisory board with final decision-making authority, one can show that committing to exogenously reveal y to all parties is good for shareholders. In such cases the shareholders will choose a supervisory board that is perfectly shareholder aligned, for reasons similar to those underlying Proposition 1.

If shareholders can commit to reveal the board’s information y , they may also be able to commit to more sophisticated mechanisms than the simple class of intermediation mechanisms that we have considered so far. It is a known result (see, e.g., Dessein 2002) that at least in the case where the board controls decision-making, the optimal mechanism takes the following simple form: whenever

y is less than a pre-specified cut-off $y^*(b_m)$ the decision is taken according the manager’s optimum while if $y \geq y^*(b_m)$ the alternative is rejected. Such a decision rule may be implemented in an indirect mechanism with a two-tier board with an informed upper tier that has a veto right, or by a one-tier board that uses state-dependent (super-majority) voting rules. We leave a full characterization of such indirect mechanisms for future drafts. It is prudent to notice however that the feasibility of designing optimal mechanisms that perfectly reveal the board’s information may depend on the precise nature of the board’s expertise. If this expertise is likely to be held by some expert board member who is not perfectly aligned with shareholders then it may be difficult to perfectly reveal this information without coercion.

4.3 Incentives and contracts

Throughout the paper we have completely ignored the possibility that the conflict of interest between management and the shareholders may be mitigated by providing management with incentives that align interests. Our results however are robust to such contracting.

Consider for example the case where $x - y$ corresponds to long run expected equity value. Suppose that managerial messages to the board are unverifiable and so are the decisions made. However, the shareholders can align management imperfectly with them by providing a long run (vested) equity share $\alpha \in (0, 1)$, keeping the residual fraction $1 - \alpha$ for themselves. In such a case, managerial payoffs from choosing the alternative is equal to $\alpha(x - y) + b_m$ whereas the payoff to shareholders is $(1 - \alpha)(x - y)$.

Notice that for each choice of α , the board bias b_d typically matters for shareholder value. Indeed, our results above extend to this setting with the managerial bias recalibrated to equal b_m/α for each choice of α . We leave for future drafts a full analysis of the interaction between the optimal choice of incentives α and governance b_d as a function of the underlying agency b_m .⁸

4.4 Alternative notions of bias

The notion of managerial bias b_m can be interpreted in terms of private benefits of empire-building or control or even in terms of behavioral biases such as hubris or overconfidence. Similarly, the board’s bias b_d has so far been interpreted in terms of “ideological sympathy” for management.

⁸Non-equity contracts such as executive options or golden parachutes may also have value in our setting.

This however is not the only possible interpretation of our set-up.

As one alternative, we may think of b_m as cash or other resources that management directly “steals” from shareholders while implementing his favored decision after it is approved by the board. We may of course think of b_d also in these terms. For instance, a board with bias b_d may be one that obtains a “cut” of the manager’s share of the “loot” leaving only $b_m - b_d$ for management. Such a self-serving board may mitigate the agency problem not only by improving communication but also via directly forcing the manager to share his loot with the board and so reducing management’s incentives to push his biased agenda in the first place. On the other hand, if the board’s bias b_d arises out of additional resources that the board also steals from shareholders, then shareholders have to trade off the gains from improved communication (as measured by $b_m - b_d$) against not only the distortion in decision-making but also the loss from increased looting by both the management and the board (as measured by $b_m + b_d$). We leave a full investigation of these issues for future drafts.

5 Related Literature

TO BE ADDED

6 Conclusion

TO BE ADDED

7 Appendix

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